

### REMARKS

Further and favorable reconsideration is respectfully requested in view of the foregoing amendments and following remarks.

Claims 21, 22, 35 and 36 have been amended to make minor changes.

Claim 34 has been amended to delete polycarboxylates from among the surfactants. The significance of this will be set forth below.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached pages are captioned "Version with markings to show changes made."

The patentability of the present invention over the disclosures of the references relied upon by the Examiner in rejecting the claims will be apparent upon consideration of the following remarks.

Thus, the rejection of claims 20, 21, 25, 26 and 32 under 35 U.S.C. 102(e) or 35 U.S.C. 103(a) based on Kierzkowski et al. is respectfully traversed.

The present invention relates to a fungicidal, bactericidal or bacteriostatic plant-protection composition comprising at least one inorganic salt, one oxide or one hydroxide of copper in suspension in an aqueous emulsion of at least one terpenic derivative; and also relates to a method for preparing this composition as well as a method for treating plants and enhancing copper efficiency in a plant-protection.

The Kierzkowski et al. reference discloses an algacide and herbicide composition comprising a copper complex, a terpene and an emulsifier.

The presently claimed compositions differ from those disclosed in this prior art in that the copper is insoluble, i.e. suspended in the aqueous phase.

The Examiner alleges however that copper suspensions are implicitly disclosed. Applicants do not agree with this point of view, for the reasons set forth below.

The Kierzkowski et al. reference deals with the problem of stabilizing copper ions in aquatic environments, notably to prevent them from producing an insoluble precipitate of copper carbonate. As the reference states:

*Not only are the precipitated copper ions no longer available to control the algae growth, but the precipitated carbonate which settles at the bottom of the treated body of water may be unduly toxic to desirable plants or animals. (Column 1, lines 43-47)*

Thus, the copper complex must be water soluble to be bioavailable for the target algae.

It is also noticed that copper ions complexed with monoethanolamine and triethanolamine, are maintained in solution even in the presence of carbonate (Column 1, lines 51-54).

This reference also discloses the use of copper sulfate without any chelating agent. Although it is a mineral salt of copper, it is not covered by present claim 20 since it is a water soluble salt and hence it cannot provide a copper suspension.

Note that additives that could possibly and fortuitously form copper complexes with the added copper salts/oxides/hydroxides such as polycarboxylates have been canceled from claim 34.

For these reasons, Applicants take the position that the subject matter of claims 20, 21, 25, 26 and 32 is not anticipated by the Kierzkowski et al. reference.

With particular regard to the rejection of these claims under 35 U.S.C. 103(a) based on Kierzkowski et al., Applicants take the position that the reference does not suggest the present invention since algacide and herbicide compositions on the one hand, and fungicide and insecticide compositions on the other hand have very distinct activities, interacting with distinct biochemical targets.

Thus, algacide compositions disclosed in this reference are penetrating or systemic substances, i.e. active substances acting by absorption into the target plant (*penetration of the plant tissues by the copper ions*; see column 5, lines 8-10), while copper inorganic salt/oxide/hydroxide used as fungicide, bactericide or bacteriostatic acts by contact:

*. . . the degree of protection from a copper compound against attack by fungi and bacteria is closely related to its capacity to saturate the surface of the plant by forming a microscopic film of particles (Emphasis added; see page 2, lines 16-20 of the present specification).*

Thus, generally, an algacide composition is not suited to plants that need a fungicidal treatment.

Applicants respectfully submit that:

- a person skilled in the art would not have consulted this reference, which deals with a very distinct activity, especially since it mostly relates to aquatic environments; and
- even if the reference were consulted, the art-skilled would not have been motivated to use copper in suspension, and, secondly, could not have expected to find a fungicidal, bactericidal, bacteriostatic activity.

For these reasons, Applicants take the position that the presently claimed invention is not obvious from the Kierzkowski et al. reference.

The rejection of claims 20-34 and 36-38 under 35 U.S.C. 103(a) as being unpatentable over the combined teachings of Dufau et al., Farm Chemicals Handbook '98 and the acknowledged prior art, is respectfully traversed.

Dufau et al. discloses a composition comprising at least:

- one alkoxylated fatty acid or ester, and
- one terpenic derivative

as additive enhancing the efficacy of an active protective substance, in particular herbicide, fungicide and insecticide.

Dufau et al. does not suggest use of a copper salt/oxide/hydroxide as fungicide or herbicide.

Moreover, the technical teaching of Dufau et al. is focused on herbicide, fungicide and insecticide that are organic molecules (page 5, lines 7-22), hence in molecules that are lipophilic, i.e. easily soluble in the oily phase.

Thus, a person skilled in the art could not have been motivated to use a hydrophilic mineral pesticide, that is present in the water phase of an emulsion as copper salt/oxides/hydroxides, and even less a suspension of copper salt/oxide/hydroxide, i.e. non dissolved in the water phase.

Hence, the art-skilled could not have been motivated to combine Dufau et al. with the Handbook '98 reference and the acknowledged prior art.

Even if these prior arts were combined, the combination still does not teach how to obtain a stable aqueous emulsion comprising a suspension of copper and at least a terpene derivative.

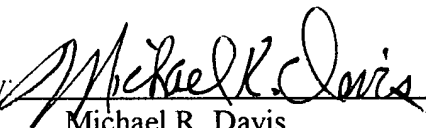
Finally, the art-skilled could not have expected to obtain a synergistic effect between copper and terpene derivative.

For these reasons, Applicants take the position that presently claimed invention is patentable over the applied references.

Therefore, in view of the foregoing amendments and remarks, it is submitted that each of the grounds of rejection set forth by the Examiner has been overcome, and that the application is in condition for allowance. Such allowance is solicited.

Respectfully submitted,

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(Amended)  
21. The composition of <sup>c</sup>claim 20, wherein said inorganic salt, oxide or hydroxide of copper is selected from copper hydroxide, copper ~~oxy~~chloride, copper carbonate, copper(I) oxide and mixtures thereof. <sub>y</sub>

(Amended)  
22. The composition of <sup>c</sup>claim 20, wherein said inorganic salt, oxide or hydroxide of copper is copper hydroxide.

23. The composition of claim 20, wherein copper is present from 200 to 600 g/l, in the form of an inorganic salt, oxide or hydroxide of copper.

24. The composition of claim 20, wherein the diameter of the particles of said inorganic salt, oxide or hydroxide of copper is not greater than 6  $\mu\text{m}$ .

25. The composition of claim 20, wherein said terpenic derivative is a monoterpene or a mixture of monoterpenes.

26. The composition of claim 20, wherein said terpenic derivative is selected from terpenic hydrocarbons, oxidized derivatives of terpenic hydrocarbons, terpenic alcohols, terpenic aldehydes and ketones and mixtures thereof.

27. The composition of claim 20, wherein said terpenic derivative is a mixture of terpenic hydrocarbons and terpenic alcohols.

28. The composition of claim 20, wherein said terpenic derivative is an essential oil.

29. The composition of claim 20, wherein said terpenic derivative is a pine oil.

30. The composition of claim 20, wherein said terpenic derivative is a pine oil containing 90% of terpenic alcohols.

31. The composition of claim 20, wherein said terpenic derivative(s) is (are) present from 50 to 400 g/l.

32. The composition of claim 20, further comprising at least one surfactant.

33. The composition of claim 20, further comprising from 20 to 100 g/l of surfactant(s).

(amended)

34. The composition of claim 20, further comprising a surfactant selected from:

- ethoxylated fatty acids,
- ethoxylated fatty alcohols,
- calcium alkylbenzenesulfonate,
- alkyl naphthalenesulfonates,
- ethoxylated alkylphenols,
- EO/PO block copolymers,
- PO/EO block copolymers,
- diisopropyl naphthalenesulfonates,
- dimethyl naphthalenesulfonates,
- di-n-butyl naphthalenesulfonates,
- ethoxylated dodecylphenols,
- sodium dodecylbenzenesulfonate,
- phosphoric esters of alkyl polyethers (acid forms and/or salts),
- phosphoric esters of ethoxylated arylphenols (acid forms and/or salts),
- phosphoric esters of ethoxylated polyarylphenols (acid forms and/or salts),
- ethoxylated castor oil,
- isopropyl naphthalenesulfonates,
- lignosulfonates,

- methyldinaphthalenesulfonates,
- methylnaphthalenesulfonates,
- n-butyl naphthalenesulfonates,
- ethoxylated octylphenols,
- phenyl sulfonates,
- polyalkylnaphthylmethanesulfonates,
- polyacrylates,
- ethoxylated polyarylphenols,
- ~~- polycarboxylates,~~
- polyvinylpyrrolidone and derivatives thereof,
- salts of sulfonated cresol-formalin condensates,
- salts of condensates of naphthalenesulfonic acid,
- salts of acrylic acid-acrylic ester copolymers,
- salts of maleic acid-olefin copolymers,
- salts of maleic anhydride-isobutylene copolymers,
- ethoxylated alkylphenol sulfates,
- ethoxylated polyarylphenol sulfates,
- sulfosuccinates,
- taurates, and
- ethoxylated tristyrylphenols.

(Amended)

35. A method of preparing a fungicidal, bactericidal or bacteriostic plant-protection composition comprising at least one inorganic salt, one oxide or one hydroxide of copper in suspension in an aqueous emulsion of at least one terpenic derivative, comprising ~~the step of~~ micronizing said inorganic salt, oxide or hydroxide of copper and other ingredients of the composition. until a stable homogeneous suspension is obtained in which the size of the particles is less than 6  $\mu\text{m}$ .

(Amended)

36. A method of preparing a fungicidal, bactericidal or bacteriostic plant-protection composition comprising at least one inorganic salt, one oxide or one hydroxide of copper in suspension in an aqueous emulsion of at least one terpenic derivative, comprising ~~the step of~~ admixing said inorganic salt, oxide or hydroxide of copper, having a diameter not greater than 6  $\mu\text{m}$ , with other

ingredients of the composition until a stable homogeneous suspension is obtained.

37. A method of enhancing the efficacy of an inorganic salt, oxide or hydroxide of copper in a plant-protection composition, comprising combining said inorganic salt, oxide or hydroxide of copper with a terpenic derivative.

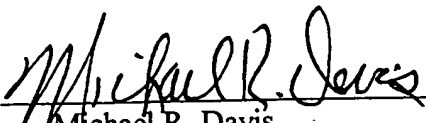
38. A method of treating plants with a product based on an inorganic salt, oxide or hydroxide of copper, comprising spraying an effective quantity of a plant-protection mixture prepared by mixing, in aqueous form, a composition of an inorganic salt, oxide or hydroxide of copper in suspension in an aqueous emulsion containing at least one terpenic derivative, on the plant to be treated.--

#### REMARKS

Original claims 1-19 have been canceled in favor of new claims 20-38, respectively, to avoid the multiple dependency of the original claims.

Respectfully submitted,

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